

3.13 CULTURAL RESOURCES

3.13.1 INTRODUCTION

Cultural resources include prehistoric and historic districts, sites, buildings, structures, objects and landscapes. Historic properties are cultural resources that meet one or more of the Secretary's criteria of significance found at 36 CFR 60.4 and are listed on, or have been found eligible for inclusion, in the National Register of Historic Places (NRHP). The term also includes sites of traditional religious and cultural significance to an Indian Tribe that meet one or more of the NRHP criteria – traditional cultural properties. Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires all federal agencies to take into account the effects of their actions on historic properties.

3.13.2 APPROACH TO ANALYSIS

The first step in the Section 106 process, as set forth at 36 CFR 800.3(a), is for the Agency Official to determine if a proposed action meets the definition of an undertaking. An "undertaking" is defined at 36 CFR 800.16(y) as "a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a federal agency, including those carried out by or on behalf of a federal agency; those carried out with federal financial assistance; those requiring a federal permit, license or approval; and those subject to State or local regulation administered pursuant to a delegation or approval by a federal agency." The Secretary has the authority to declare surplus conditions with reference to the LROC developed pursuant to the Colorado River Basin Project Act, and to make surplus determinations during the AOP development process. Using the existing LROC and AOP process, the Secretary has declared the existence of surplus conditions every year since 1996 and could continue to do so in the absence of interim criteria. Reclamation has determined development and implementation of interim surplus criteria for use in conjunction with the LROC and AOP process has the potential to temporarily change the way in which surplus is determined for the period 2000-2015. Development and implementation of interim surplus criteria can thus be construed as a temporary change in an ongoing activity that is part of an existing program, the latter being the delivery of Colorado River water. Thus, it meets the definition of an undertaking for the purposes of complying with Section 106 of the NHPA.

The second step in the Section 106 process is to determine if the undertaking has the potential to cause effects to historic properties. If an undertaking "does not have the potential to cause effects on historic properties," pursuant to 36 CFR 800.3(a)(1), the Agency Official has no further obligations under Section 106. *Effect* is defined at 36 CFR 800.16(i) as "alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register." Reclamation has determined development of interim surplus criteria is an undertaking, but one without potential to

affect historic properties. Reclamation's rationale for this determination is outlined below.

3.13.3 AFFECTED ENVIRONMENT

The term *area of potential effects* (APE) is defined at 36 CFR 800.16(d) as “the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if any such properties exist.” This section goes on to state “the area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects cause (*sic*) by the undertaking.” For the purposes of evaluating the potential for development and implementation of interim surplus criteria to affect historic properties, the APE has been differentially defined for Lake Powell, Lake Mead, the Grand Canyon, and the reservoirs and river corridor from below Hoover Dam to the SIB. This is to address the effects of changes in lake elevations and mean monthly flow rates predicted by the hydrological modeling runs presented earlier in this EIS, and other factors. The APE definitions used in this analysis are as follows:

Lake Powell: That area around the margin of the lake extending from the historic maximum pool elevation of 3708 feet msl, to the 3595-foot contour. The 3595-foot contour has been selected as the low elevation cutoff point, as hydrological modeling runs indicate there is a 10 percent probability the surface elevation of the lake could drop to this level by 2016 for the Shortage Protection Alternative.

Lake Mead: That area around the lake margin extending from its historic high water level of 1225.5 to 1083 feet msl. The 1083-foot contour has been selected as the low elevation cutoff point as this represents the minimum pool level necessary for continued power generation. The maximum flood pool elevation is 1229 feet msl.

Colorado River through the Grand Canyon: As discussed in Section 1.4.2, the Glen Canyon EIS analyzes the effects of operation of Glen Canyon Dam on downstream resources of the Grand Canyon, including cultural resources. The Record of Decision (ROD) for this EIS provides for monitoring and management of affected cultural resources. Section 106 compliance for existing operations and implementation of surplus criteria are and will be subject to the Cultural Resources Programmatic Agreement prepared with respect to the operation of Glen Canyon Dam. Thus it will not be considered further in this analysis.

Colorado River from Hoover Dam to SIB: Downstream from Hoover Dam, the Colorado River flows through a relatively narrow valley along which are located Lake Mohave and Davis Dam, Lake Havasu and Parker Dam, and a series of smaller dams that serve to impound and divert water for specific purposes. As indicated in Section 3.3.4, although Lake Mohave and Lake Havasu are located within the overall APE of the current action, implementation of interim surplus criteria will have no effect on the surface elevations or operation of these reservoirs. As a consequence, they are not

considered further in this analysis. Below Davis and Parker dams, the river is fringed by riparian vegetation and marshy backwaters, and a series of levees serve to contain its flow. Because under all but the most exceptional circumstances (e.g., a catastrophic flood event, levee failure, etc.), the flow of the Colorado River is expected to be contained within its channel and the levees, and the APE for free-flowing stretches is considered to be the river channel and that area of the floodplain lying within the levees.

3.13.4 ENVIRONMENTAL CONSEQUENCES

The No Action and each of the action alternatives could result in changes in the surface elevations of Lake Powell and Lake Mead and changes in release patterns and flow of the Colorado River below Hoover Dam. These changes could result in changes in erosional and/or depositional processes that could affect historic properties, were such properties present. However, Reclamation considers the probability for the existence of cultural resources retaining qualities that would qualify them for listing on the NRHP within the interim surplus criteria APEs, as defined above, to be extremely low.

Although Hoover and Glen Canyon dams were constructed prior to passage of the NHPA in 1966, attempts were made to locate and salvage information from significant prehistoric and historic archaeological sites prior to inundation by Lake Mead and Lake Powell. As a result of these efforts, numerous kinds of sites including masonry structures, wattle and daub roomblocks, rockshelters, lithic and ceramic scatters, trails, shrines, quarry locations, salt mines, and historic towns, mills, roads, etc., are known to be submerged beneath the waters of the lakes.

Under the baseline condition for the No Action Alternative, impacts that are likely to have occurred to sites inundated by the reservoirs can be expected to vary in kind and degree, depending on a number of factors including the type of site, slope, the substrate on which the site is located, the site's elevation with respect to historic operation of the reservoir, the number of times a site has been inundated, exposed and re-inundated, etc. In areas where the lake margins make contact with unconsolidated sediments (i.e., alluvial fans, fluvial deposits, etc.), wave action and rising and falling water levels can cause cutting and bench formation, exposure and removal of finer-grained sediments, and sorting and redistribution of coarser materials in the sediment matrix along the slope of the bench or beach. If offshore currents are present, materials may be redistributed along the direction of flow. Where lake margins intersect with lenses or large exposures of poorly consolidated bedrock (e.g., carbonate cemented sandstones, formations containing large quantities of gypsum, etc.), rising and falling water coupled with wave action can, over time, result in undercutting and collapse. Lithic artifacts may suffer edge damage or become water-worn, bone items may be splintered or deteriorate completely, and entire classes of cultural materials (i.e., basketry, vegetal food remains, etc.) can be lost as a result of repeated episodes of exposure and inundation.

In general, sites within the range of a reservoir's historic high and low elevations that have been repeatedly inundated and exposed can be expected to have suffered the greatest amount of damage. Since its equalization with Lake Mead in 1974, surface elevations for Lake Powell have fluctuated between 3708 and 3627 feet msl. Sites located between these elevations can thus be expected to have suffered moderate to severe levels of inundation damage and are unlikely to have qualities that would qualify them for consideration as historic properties eligible for potential listing on the NRHP. Modeling runs indicate there is a 10 percent probability the surface level of Lake Powell will drop to 2595 feet msl by 2016. Sites situated between 3627 feet msl and the maximum low of 2595 feet msl predicted by the modeling runs can be expected to have been damaged as the waters of the lake rose, but in the absence of other factors (i.e., strong subsurface currents, landslides, etc.), damage should be less than that anticipated for sites located at higher elevations. Given this, there is a slight possibility sites located between 3627 and 2595 feet might retain some quality that would qualify them for listing on the NRHP.

Lake Mead rose to its historic high elevation of 1225.5 feet msl in 1983 and has dropped to its historic low elevation of 1083 feet on two occasions. The first drop occurred during the period extending from 1954 to 1957, while the second occurred during 1965 and 1966. Sites located between 1225 and 1083 feet msl can be expected to have suffered inundation damage. Damage to all sites is expected to be severe given the 60-plus years the reservoir has been operating, the large annual fluctuation range in reservoir elevation (from 10 to as much as 75 feet, prior to the filling of Lake Powell), and the reduction in pool elevation to the historic low on two occasions. Reclamation considers it is highly unlikely sites exist between elevations of 1225 and 1083 feet msl that will retain any qualities that would qualify them for consideration as historic properties eligible for potential listing on the NRHP.

Development and implementation of interim surplus criteria will result in changes in release patterns and mean monthly flow rates along the Colorado River below Hoover Dam. The results of the hydrological modeling runs for all interim surplus criteria alternatives indicate there will be an increase in mean monthly flow rates from Hoover Dam downstream to Parker Dam, while mean monthly flow rates below Parker Dam will decrease.

The Colorado River drains a vast watershed covering portions of seven states. Prior to construction of Hoover Dam, discharge rates along the river varied seasonally, averaging 20,000 cfs with peak flows in excess of 200,000 cfs, making the river extremely dynamic and unpredictable in its behavior. Examination of historic maps during archival work conducted in association with a series of recent cultural resource inventories in the vicinity of Yuma, Arizona (i.e., Bischoff et al., 1998; Huber et al., 1998a, Huber et al., 1998b; Sterner and Bischoff 1998), indicated the Colorado River altered its course several times between the 1840s and the 1950s, in one case meandering two miles across its floodplain. Geomorphological trenching on the floodplain in areas behind the modern levees revealed the presence of sedimentary

deposits characteristic of a high energy fluvial environment. Such deposits are unlikely to contain *in situ* cultural remains. Inventory of several parcels located on the floodplain was also revealing. Only recent trash was found on parcels located inside the levee system, while the earliest cultural materials identified on parcels outside the levees did not pre-date construction of the levee. Prehistoric cultural remains were confined to locations on the first terrace above the 100-year floodplain. The site patterning observed during these studies is doubtless applicable in a general way to other valleys along the reach of the Colorado River below Hoover Dam.

Flow releases associated with development and implementation of interim surplus criteria will be within existing operational limits. Increases in flow rates for the reach of the Colorado River between Hoover and Parker dams and decreases in flow rates below Parker Dam do not have the potential to cause effects to historic properties, as the river in these areas is entrenched and confined in its channel by a system of levees. Furthermore, studies conducted in the vicinity of Yuma, Arizona, suggest that were bank erosion to occur, sediments adjacent to the current river channel would most likely reflect deposition under high-energy fluvial conditions. Sediments deposited under such conditions are unlikely to contain *in situ* cultural remains that would possess qualities that would qualify them for consideration as historic properties potentially eligible for listing on the NRHP.

No surface-disturbing activities will occur as a result of flow releases associated with development and implementation of interim surplus criteria, as such releases will not require construction of new facilities. No modification of existing facilities would be necessary; thus there is no potential for impacts to the structure or functioning of Hoover Dam (a National Historic Landmark), Parker Dam or Imperial Dam (both of which have been determined eligible for listing on the NRHP).

In conclusion, cultural resources that might exist within the APE for Lake Powell and Lake Mead have been repeatedly inundated, exposed, and re-inundated, making it highly unlikely that any retain qualities that would qualify them for consideration as historic properties eligible for listing on the NRHP. Increases and decreases in mean monthly flow rates below Hoover Dam do not have the potential to affect historic properties as flows will be confined to the river channel, which, when not confined by rocky canyon walls, is contained within levees. Were bank erosion to occur, sediments adjacent to the channel are of a type unlikely to contain cultural materials. There is virtually no chance cultural resources retaining qualities that would qualify them for consideration as historic properties potentially eligible for inclusion on the NRHP exist within the APE of the present undertaking. Reclamation thus considers development and implementation of interim surplus criteria to be an undertaking without the potential to affect historic properties. Pursuant to 36 CFR 800.3(a)(1), having determined development and implementation of interim surplus criteria to be an undertaking with no potential to affect historic properties, Reclamation has no further obligations under Section 106 or Part B of 36 CFR 800.

Reclamation has prepared a memorandum discussing this issue and has forwarded it to the Advisory Council on Historic Preservation.